

## ABSTRACT OF THE DISCLOSURE

The invention relates to macromolecules auto-assembled and photopolymerised around carbon nanotubes. Said macromolecules are essentially formed from rings of lipid compounds, polymerised about the nanotubes, said polymerised compounds being obtained from lipid molecules with one or two chains A, bonded to a group Z where A is a chain,  $\text{CH}_3-(\text{CH}_2)_m-\text{C}\equiv\text{C}-\text{C}\equiv\text{C}-(\text{CH}_2)_n-$ , where n and m, independently = whole numbers from 1 to 16 and Z is a polar head group embodied by a  $-\text{COOH}$ ,  $-\text{CO}-\text{NH}-\text{Y}$ ,  $-\text{NH}_2$  or  $\text{N}^+(\text{R})_3$ , where R is an alkyl with  $\text{C}_1$  to  $\text{C}_4$  and Y is a  $-(\text{CH}_2)_4-\text{C}(\text{R}_1)-\text{N}(\text{CH}_2-\text{COOH})_2$  group with  $\text{R} = \text{H}$ , or a  $\text{COOH}$  group, where A is a single lipid chain or a group of structure (I) or (II), where  $\text{R}_2 = \text{a COOH}$ , or  $-\text{CO}-\text{NH}-\text{Y}_1$  group with  $\text{Y}_1 = \text{a }-(\text{CH}_2)_4-\text{C}(\text{R}_3)-\text{N}(\text{CH}_2\text{COOH})_2$  group with  $\text{R}_3 = \text{H}$  or a  $\text{COOH}$  group, where Z and  $\text{R}_2$  can also be neutral polar head groups of the sugar or polysaccharide type. The above is of application particularly to the protection and purification of nanotubes, as a hydrophobic molecule or membrane protein vector or as a molecular motor.